 Science in a Bag Activity

“Diggin’ for Chips:” Cookie Excavation

Grade 5: Life Science

Student Page

**Content Standard 5:** Biodiversity and Change

**Grade Learning Expectation:** **GLE 0507.5.2** Analyze fossils to demonstrate the connection between organisms and environments that existed in the past and those that currently exist.

**Performance Indicator State: SPI 0507.5.2** Explain how fossils provide information about the past.

**Task Objective:** The students will become archaeologists and excavate their own “dig site” searching for “artifacts.”

**Materials:**

* Chocolate chip cookies
* Ziploc baggies (1 per cookie)
* Paper towels
* Toothpicks (2 per each cookie)
* Cookie grid (This will go in your learning logs with the assessment questions at the end of this activity.)
* Archaeology text packet (2 pages)

**Procedure:**

1. Read the archaeology text packet (2 pages) before beginning your “dig.”
2. Place paper towel on surface of the desk and remove a cookie from the bag.
   1. While working with your cookie, it is advised not to eat your dig site or munch on your priceless artifacts.
3. Retrieve the cookie grid and sketch where the “artifacts” lay in your “dig site.”
4. Remove the toothpicks from the bag. These will serve as your excavation tools.
5. Now it’s time to dig! Carefully excavate the “artifacts” (the chocolate chip) out of the cookie trying to cause as little damage to the “artifact” or the “dig site” (the cookie).
   1. Try not to pick up your cookie when doing your excavation. Remember archaeologists cannot pick up their dig sites!
6. Once you have finished your excavations, cleanup as directions imply.
7. Place the cookie grid in your learning log and answer the assessment questions.

**Assessment:**

1. What is an archaeologist?
2. What is excavation?
3. Why can’t archaeologists go back and repeat their work if they missed something the first time?
4. Did some areas of your cookie have more “artifacts” than others? If so, why do you think that is?

**Clean-up:**

* If you wish, you may now eat your “dig site” and “artifacts.”
* If you do not wish to eat your cookies: please throw these items in the trash along with the toothpicks, baggies, and paper towels.
* Place archaeology text packet back into box.

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Teacher Page

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**Task Objective:** The students will become archaeologists and excavate their own “dig site” searching for “artifacts.”

**Explanation:** Students will imitate the process of an archaeological excavation as they “excavate” the “artifacts” (the chocolate chips) in cookies. They will discover how excavation is both a scientific and destructive process. Students will also practice coordinate graphing skills by mapping the results of their excavations.

**Common Misconceptions:**

Listed below are the ten most common misconceptions about archeology and archaeologists:

1. Archaeologists dig up dinosaurs:

* Archaeologists study the life and behavior of modern people. *Paleontologists* dig up fossilized dinosaur bones.

1. Archaeologists don’t do anything useful:

* Archaeology has long been viewed as a glorified hobby with little real practical application. Archaeologists are actually the chroniclers of humanity’s achievements and failures, and their usefulness is just now becoming apparent to those in other areas.

1. Archaeologists are tomb robbers:

* There was a time when archaeologists sole concern was finding museum-quality pieces that justified the expenses of their adventure. Presently, archaeologists collect and analyze scientific data to uncover trends in human behavior, human ecology, and more. Human remains are only uncovered when it’s legal to do so, and if doing so will help us answer specific questions about the culture being studied.

1. Archaeologists spend most of their time excavating:

* Excavation is only one part of a systematic scientific process, whose goal is to answer a specific research question. Once the data is compiled from the excavations, the real work begins. For every day spent excavating, weeks or months are spent in an office or lab, recording and analyzing every detail.

1. Archaeologists like to dig up graves:

* Excavating human remains is tedious, time-consuming, costly, and sometimes controversial. If even one skeleton is uncovered on a site, it can stop the rest of the dig in its tracks. While uncovering a body may sound fascinating, no human can look at the bones of another without a genuine appreciation for life, and being reminded of our own mortality.

1. Archaeologists all dig in Egypt:

* Not all archaeologists are Egyptologists. Archaeologists tend to specialize in a particular area, a geographical region, an aspect of human behavior, or a time period.

1. Archaeologists get to keep their finds:

* Archaeologists are scientists, and with that role come pride and professionalism. In the archaeological community, there is a deep sense of desire to make information available to other researchers and to the public. Archaeologists see themselves, as the curators of humanity, and in doing so do not like to keep things for themselves.

1. Archaeologists are running out of things to dig up:

* Every country has thousands and thousands of archaeological sites - most of which have yet to be discovered. Many well-known sites, where excavation has been ongoing for years, are only partially uncovered. There is always more to discover.

1. Archaeologists have to know a lot about history:

* Many archaeologists enjoy history, and most have attended some form of higher-level education, so they know as much history as the average guy. However, most archaeologists (but not all) study prehistory, or the time period before writing.

1. There is only one kind of archaeology:

* Archaeology is not a singular field and like anything else it has its own branches and specializations. There are zooarchaeologists, experimental archaeologists, historical archaeologists, environmental archaeologists and many more.

**Real-World Connection:**

Archaeology is the scientific discipline responsible for the recovery and interpretation of the remains of past cultures. The state of Tennessee has an incredibly rich Native American heritage and the archaeological work that has assisted in understanding that past are revealed in the McClung Museum’s comprehensive and engaging exhibition Archaeology & the Native Peoples of Tennessee. This exhibit is based on more than sixty-five years of research by the University of Tennessee archaeologists, and features many of the finest artifacts of the museum’s world-class archaeological research collection, including its widely known examples of prehistoric Native American art.

**Connections Across the Curriculum:**

**Math**

Graph the data of where the “artifacts” lay in the cookie grid.

GLE 0506.1.5 Use mathematical ideas and processes in different settings to formulate patterns, analyze graphs, set up and solve problems and interpret solutions.

GLE 0506.5.1 Make, record, display and interpret data and graphs that include whole numbers, decimals, and fractions

**Social Studies: Culture**

Culture encompasses similarities and differences among people including their beliefs, knowledge, changes, values, and traditions. Students will explore these elements of society to develop an appreciation and respect for the variety of human cultures.

1.01 Understand the diversity of human cultures.

1.02 Discuss cultures and human patterns of places and regions of the world.

**Social Studies: Geography**

Geography enables the students to see, understand and appreciate the web of relationships between people, places, and environments.

3.01 Understand how to use maps, globes, and other geographic representations, tools, and technologies to acquire, process and report information from a spatial perspective.

3.02 Recognize the interaction between human and physical systems around the world.

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**References:**

Teach Archaeology with Edible Excavation

<https://blog.hmns.org/2012/07/educator-how-to-teach-archaeology-with-edible-excavation/>

Cookie Excavation

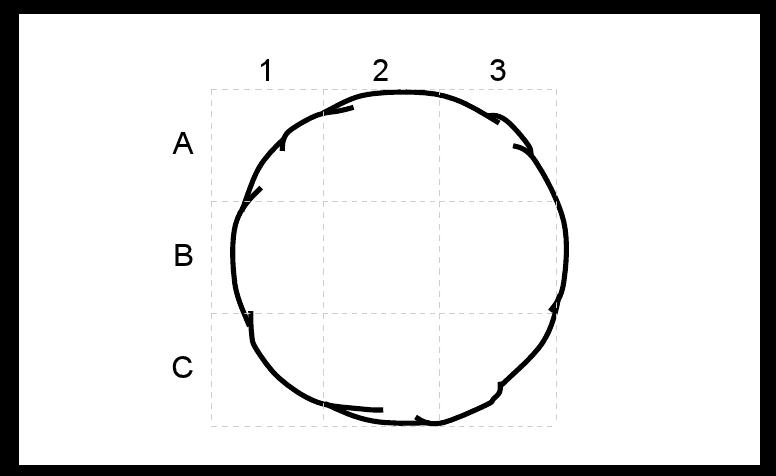
<http://www.southeasternarchaeology.org/PDF/Cookie%20Excavation.pdf>

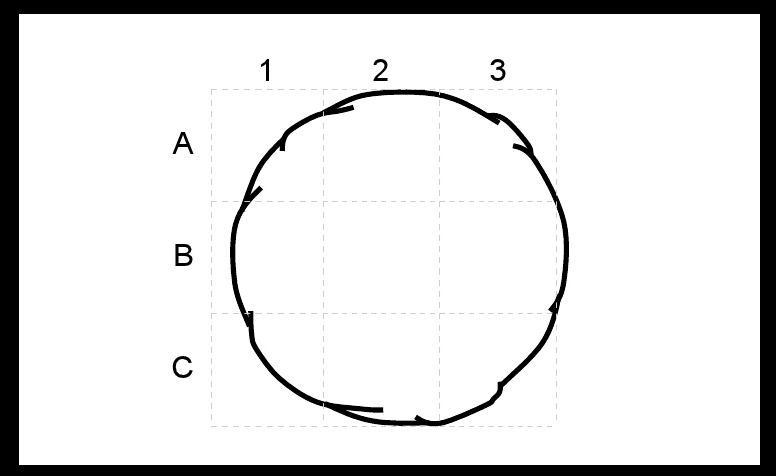
10 Common Misconceptions About Archaeologists

<http://www.shanaleslie.com/item.asp?iid=28>

Archaeology & the Native Peoples of Tennessee Exhibit

<http://mcclungmuseum.utk.edu/exhibits/native-tennessee/>





Archaeology Text Packet

